NYC Yellow Taxi Tipping

What drives tipping?

NYC Yellow Taxi trips: Data & Scope

- **Dataset:** NYC Yellow Taxi trips (Jul – Sep 2025)
- **Enrichment:** Taxi Zones (PU/DO zones) + BID boundaries (zone overlap %)
- **Focus:** tipping behaviour in card paid trips
- **Unit of analysis:** one record = one trip
- **Output:** Tableau Story (Hypothesis tests)

NYC Yellow Taxi trips: Data & Scope

- **From raw to analysis sample**
  - **Raw trips loaded:** ~ 11.7 million rows
  - **Analysis sample:** ~ 6.8 million rows (-42 %)

Payment Group	Avg. Tip Rate Fare	Avg. Tip Rate Pretip
Card	26,70%	17,6%
Cash	0,00%	0,0%
Dispute	0,05%	0,0%
No charge	0,08%	0,0%
Unknown/Other	1,44%	1,1%

Cash tips often appear as 0 in TLC records

- **Key Metrics**
  - **Tip rate (%) =** share of trips with tip_amount > 0
  - **Tip % of fare =** tip_amount / fare (fare = pre-tip total in this analysis)
  - **Tip % of fare (P99 capped) =** used to reduce extreme outliers ans stabilizie averages
- **Payment Scope**
  - Cash tips are **not reliably captured** → excluded to reduce measurement bias

Analysis flow & hypotheses

Overview → Tipping mechanics → Hypothesis tests → Conclusion

Research question: Is tipping driven more by trip context (size + friction) than by location alone?

- **Tipping Mechanics (Trip Size):**
  - Validate how the tipping metrics behave across fare size
- **Hypothesis:**
  - H2 Stress/Friction = higher minutes-per-mile reduces tipping
  - H3 Airport = Airport (JFK/LGA) trips more than non-airport trips
  - H4 BID exposure= higher BID overlap at dropoff → higher tipping

Let’s Continue in Tableau

Key Findings

(H1) Tipping Mechanics

- **Trip size is the key confounder.** Small fares show step-like tipping (~$2), which inflates tip % on small trips – so comparisons must be made within fare bins

H2 Stress/Friction

- **Stress reduces tipping probability consistently,** even within trip-size buckets.
  Tip % moves less ; the **clearer signal is whether people tip or not**.

H3 Airport

- **Airport uplift is conditional.** Overall averages can look flat or even lower because airport trips have much higher fares, but **within fare bins airport trips often show higher tipping probability**.

H4 Business improvement districts

- BID is not dose–response. Increasing BID overlap does not steadily increase tipping; the pattern is closer to a threshold effect (0% vs >0%), strongest from $30–50 upward, and more consistent at dropoff than pickup.

So what? Practical implications

- **Guardrail**
  - Always control for fare (trip size) when comparing groups
- **Reduce friction where possible**
  - stop-and-go conditions lower the likelihood of tipping
- **Segment > blanket rules**
  - Airport effect show up mainly in mid/high
- **Use BID as a marker**
  - Focus on none vs. Some exposure; don't assume linear „more BID → more tipping"

The best lever isn't where, it's how the ride feels, and which segment the trip is in.

Resultstable

Hypothesis	Metric Focus	Result	Observation	Implication
Trip Size /tipping mechanics	Tip % of fare	Confirmed (measurement effect)	Tip metrics change strongly with fare size; low fares behave non-linearly	Control for fare bins before comparing contexts.
Stress / Friction	Tip rate (%)	Supported	As minutes-per-mile increases, tip probability declines (holds within fare buckets).	Friction mostly affects whether people tip, not the % when they do.
Airport	Tip rate (%) Tip % of fare	Conditional	Overall looks flat/lower; within fare bins, airports often tip higher in mid/high fares.	Airport uplift is segment-specific, not universal.
BID eposure	Tip rate (%) Tip % of fare	Threshold, not dose-response	Main split is no exposure vs some exposure; more overlap doesn't reliably add more.	BID is a context marker; "more overlap" isn't a scalable lever.